TITLE BAR CODE LABEL WITH ER I.D. NUMBER HERE

62B1

LOS ALAMOS

LOS ALAMOS NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION
Records Processing Facility
ER Record Index Form
(Side 1 of 2)

DATE RECEIVED: 7-22-92 PROCESSOR: Kaa

Part I: Complete all fields; indicate if not applicable or appropriate; please write legibly.

DOCUMENT TO: — DOCUMENT DATE: 11-1-81

ORIGINATOR NAME: Johnny R. Harper ORGANIZATION: —

SYMBOL: LA-9047-MS PAGE COUNT: 12

SUBJECT/TITLE: The Decommissioning of TA-21-153, A ^{227}Ac Contaminated Old Filter Building

RECORD TYPE (Circle relevant type for primary record; type of attachments should be selected on *Keywords List*):

Analytical Data	FAX	Map	Plan	Study
Chain of Custody	Figure	Memo	Procedure	Telephone Record
Computer Output	Form	Microform	Purchase Request	Transcription
Contract	Interview	Notebook	Receipt Acknowledgment	Video
Controlled Distribution	Letter	Personal Notes	Report	Work Plan
Drawing	Logbook	Photo	Review	Other

RECORD CATEGORY: R
(P for Programmatic or R for Reference)

RECORD PACKAGE #: —

RECORD FILMED (Y/N): no

RECORD LOCATION: Lateral files,
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ATTACHMENTS FILMED (Y/N): —
(Were attachments to this record filmed?)

LOCATION: —
(Indicate location of attachments.)

TECH AREA(S)	PRS NO(S)	ADS NO(S)	STRUCTURE NO(S)/MDA
LIST RELEVANT TECH AREA(S)	LIST RELEVANT PRS(S)	LIST RELEVANT TOC/ADS NO(S)	LIST RELEVANT STRUCTURE NO(S)/MDA
21	—	1106	21-153

10893

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WBS NO(S)	DOCUMENT TO	ORIGINATOR NAMES
(LIST RELEVANT WBS NO(S))	(LIST MULTIPLE RECIPIENTS)	(LIST MULTIPLE ORIGINATORS)
1.5.13	—	Raymond Garde

CORRECTION (Y/N): —
(Is this a correction to a record previously processed?)

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CORRECTION DESCRIPTION (Optional): —

SUPERCEDE: — REPLACE: — DELETE: — ADD: — REVISE: —

ATTACHMENT LIST

—

KEYWORDS: Circle relevant KEYWORDS from the list below for ER Record #: (62B)

MISCELLANEOUS (List other indexing criteria as necessary; please write legibly):

Abandon
Aboveground Tank
Absorption
Abstract
Accelerator
Access
Accident
Accumulation
Acid
Active
Administrative
ADS (Activity Data Sheet)
Adsorption
AEC (Atomic Energy Commission)
Aerial
Agenda
Agreement
Air
Alpha
Americium
Analysis
Analytical
AOC (Area of Concern)
Approval
Aquifer
ARAR (Applicable, Relevant, or Appropriate Requirements)
Archeology
Archive
Area
Arsenic
Asbestos
Asphalt
Assessment
Audit

Bacteria
Barium
Baseline
BCP (Baseline Change Proposal)
Beds
Bermed Area
Beryllium
Beta
Biology
Blank
Boiler
Boneyard
Buried
Burn
Burn Site

Cadmium
Caisson
Calibration
Canyon
Capacitor
Caustic
CEARP (Comprehensive Environmental Assessment and Response Program)
Cement
CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)
Certification
Cesium
Chain-of-Custody
Chamber
Change Control
Change Order
Charge
Chart
Checklist
Chemical
Chromium
Cleanup
Clearance
Clothing
Closure
CMI/RA (Corrective Measures Implementation/Remedial Action)
CMS/FS (Corrective Measures Study/ Feasibility Study)
Comment
Committee
Community Relations
Compliance
Compressed Gas
Computer Modeling
Computer Output
Concern
Concrete
Concurrence
Configuration
Construction
Container
Containment
Contaminant
Contract
Control

Controlled Distribution
Core
Corrective Action
Correspondence
Criteria

Data
Deadline
Debris
Decision Analysis
Decommission
Decontamination
Deficiency
Deliverables
Demolition
Description
Detection
Detonation
Development
Discharge
Disposal
Documentation
DOE (Department of Energy)
DQO (Data Quality Objectives)
Draft
Drainage
Drainline
Drawing
Drilling
Drop Tower
Drum
Dry Well
Dump
Duplicates

Ecology
Effluent
EIS (Environmental Impact Statement)
Emission
Engineering
Environmental
EPA (Environmental Protection Agency)
Equipment
ERDA (Energy Research and Development Administration)
Erosion
Error
ES&H (Environment, Safety, and Health)
Estimate

Evacuation
Evaluation
Evaporator
Excavation
Exclusion
Exhaust
Experiment
Explosive
Exposure
Extension
Extraction

Facility
Farm
FAX
Fence
Field
Figure
Filter
FIMAD (Facility for Information Management, Analysis, and Display)
Finding
Fire
Firing Site
Fiscal
Five Year Plan
Flowchart
Fluid
Form
Framework
Free
Fuel

Gamma
Gas
Generation
Generic
Geochemistry
Geology
Geophysics
Glass Breaker
Glove Box
Graph
Guidance
Gun

Handling
Hazardous
Health
HE (High Explosive)
History
Hole
Home Owner

HSWA (Hazardous and Solid Waste Amendments)
Hydrology
Hygiene

Implementation
Implosion
Impoundment
Inactive
Incinerator
Industrial
Injection Well
Inorganic
Inspection
Installation
Interim
Interim Action
Internal
Interview
Inventory
Investigation
IRM (Interim Remedial Measure)
Isotope
IWP (Installation Work Plan)

Lab Job
Laboratory
Lagoon
Land
Landfill
Laundry
Leach
Lead
Leak
Legal
Letter
Limit
Lines
Liquid
List
Log
Logbook

Magazine
Management
Manhole
Map
Material
MDA (Material Disposal Area)
Media
Meeting

Memo
Mercury
Metal
Microform
Minimization
Minutes
MIS (Management Information System)
Mixed Waste
MOA (Memo of Agreement)
Model
Modification
Money (Allocation, Appropriation, Budget, Cost, Funding, etc.)
Monitoring
Monthly Report
Mortar Impact Area
MOU (Memo of Understanding)
MSA (Major System Acquisition)

NEPA (National Environmental Policy Act)
NFA (No Further Action)
Nitrate
NMED (New Mexico Environmental Division)
NMEID (New Mexico Environmental Improvement Division)
NOD (Notice of Deficiency)
Non-explosive
Notebook
Notification
NPDES (National Pollutant Discharge Elimination System)
NRC (Nuclear Regulatory Commission)
Nuclear

Observation
Off-gas
Oil
Open
Open Burning
Operation
Order
Organic
Organization
OSHA (Occupational Safety & Health Administration)
OU (Operable Unit)
Outfall
Outline

PA/RFA (Preliminary Assessment /RCRA Facility Assessment)
PCB (Polychlorinated Biphenyl)
Permit
Personal Notes
Personnel
Personnel Qualification
Photo
Pilot Study
Pipe
Pit
Plan
Plant
Plutonium
Pollution
Polonium
Polaroid
Potential
Presentation
Prevention
Priority
Procedure
Program
Programmatic
Project
Project Leader
Propellant
Property
Proposal
Protection
Protocol
PRS (Potential Release Site)
Public
Pump
Purchase Request

Quality
QA (Quality Assurance)
QP (Quality Procedure)
Quarterly Report

Radioactive
Radiochemistry
Radionuclide
Rationale
RCRA (Resource, Conservation, and Recovery Act)
Reactor
Receipt Acknowledgment
Recommendation
Reconnaissance
Records
Recovery
Recycle
Reduction
Reference
Regulation
Release
Remediation
Removal
Report
Request
Requirements
Research
Resin Bed
Resolution
Resource
Response
Restoration
Restriction
Results
Review
Revision
RFI/RI (RCRA Facility Investigation/Remedial Investigation)
Risk
RPF (Records Processing Facility)

Safety
Salamander
Salvage
Sample
Sampling Plan
Sanitary
Satellite
Schedule
Scope
Scrap Detonation Site
Screening
Scrubber
Security
Seep
Seminar
Semivolatile
Septic
Sewer
Shaft
Shell
Shot
Silver
Site
Sludge
Soil
Solid
Solvent
SOP (Standard Operating Procedure)
SOW (Statement of Scope of Work)
Specific
Spill
Stack
Standard
Statistics
Steamline
Steel
Storage
Strontium
Structure
Study
Subcontractor
Subsurface
Summary
Sump
Support
Surface
Surveillance
Survey
Swipe
SWMU (Solid Waste Management Unit)
System

Tank
Task
TCLP (Toxicity Characteristic Leaching Procedure)
TDD (Technical Document Description)
Technical
Technical Team
Technology
Telephone Record
Test Area
Testing
TLD (Thermoluminescent Dosimeter)
TOC (Table of Contents)
Townsite
Toxic
Tracking
Training
Transcription
Transfer
Transformer
Transport
Treatment
Trench
Trip Report
Tritium
TRU (Transuranic)
TSCA (Toxic Substances Control Act)
Tuballoy
Tuff

Underground
Uranium
Urine
USGS (United States Geological Survey)
UST (Underground Storage Tanks)
Utility

Validation
Variance
VE (Value Engineering)
Ventilation
Verification
Video
Volatile
Volume

Warehouse
Waste
Water
WBS (Work Breakdown Structure)
Weapon
Well
Work
Working Group

Zinc

Los Alamos Environmental Restoration Records Processing Facility

ER Record I.D.# 0006281

LA-9047-MS

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The Decommissioning of TA-21-153, A ^{227}Ac Contaminated Old Filter Building

Los Alamos Los Alamos National Laboratory
Los Alamos, New Mexico 87545

LA-9047-MS

UC-70
Issued: November 1981

The Decommissioning of TA-21-153, A ^{227}Ac Contaminated Old Filter Building

Johnny R. Harper
Raymond Garde

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

THE DECOMMISSIONING OF TA-21-153, A ^{227}Ac CONTAMINATED OLD FILTER BUILDING

by

Johnny R. Harper and Raymond Garde

ABSTRACT

An exhaust air filter building contaminated with ^{227}Ac was decommissioned at the Los Alamos National Laboratory, Los Alamos, New Mexico, in 1978. The building was constructed in the late 1940s to clean exhaust air from several buildings at TA-21, DP Site. It was in service until March 1970.

The project involved preliminary decontamination, dismantling the building, and burying the debris at an on-site waste disposal/storage area.

This report presents the details on the decommissioning procedures, the health physics, the waste management, the environmenmental surveillance, and costs for the operation.

I. INTRODUCTION

In the late 1940s a filter building was constructed at the Los Alamos National Laboratory, Los Alamos, New Mexico, to clean the exhaust air from several buildings at Technical Area (TA)-21, DP East Site. The structure, designated as TA-21-153 (Fig. 1) consisted of

a. a two-story frame and masonary building (Figs. 2 and 3) with 200 m^2 of ground floor area and 84 m^2 of second story floor area;

b. 42 lineal meters of metal duct (Fig. 4);

c. transitional plenums, filter housings with electromatic filters, (Fig. 5); and

d. two blowers and two stacks.

and 10). Only 0.3 dis/s/cm^2 of alpha activity was detected inside the blowers and stacks.

The dry filters (Fig. 11) were removed. No alpha activity was detected probably because they had been installed after the filter building was no longer in operation during a precleaning operation in 1970. Access doors were cut into the precipitator frames (which housed the dry filters) to expose the electromatic filters (Fig. 12). These filters were cut into sections and spray painted prior to removal. The maximum alpha activity detected was 12 dis/s/cm^2.

The transitional plenum was isolated from the building. Its interior sheet rock walls were stripped and placed in plastic-lined cardboard boxes (Fig. 13). The surfaces were painted. The exterior surfaces of the blower room and the transitional plenum (Fig. 14) were manually stripped of their asbestos transite siding. The remaining sheet rock walls of the transitional plenum were removed. A chain saw was used to sever the blower room (Fig. 15) and the transitional plenum from the building proper, then a front-end loader was used to collapse the structures (Figs. 16 and 17). Water was used for dust control. The ensuing rubble was loaded into plastic-lined dump trucks (Fig. 18).

For protection of the workers during the next phase, a second high efficiency filtered ventilation system with an airflow rate of 1.9 m^3/s was connected to the building (Fig. 19). The remaining electromatic filters inside the building were removed in plastic-lined cardboard boxes and barrels. The maximum alpha activity detected was 12 dis/s/cm^2 on the ground floor. No activity could be detected in the second story.

The building interior was mopped with water and spray painted (Fig. 20). Asphalt mixed with latex paint was poured into all drain lines. The floors were coated with 1.25 cm of the mixture. Examination of the building interior indicated no detectable alpha activity, and the airborne contamination was (for the first time during the operation) lower than the maximum permissible concentration values.

The building was razed with a bulldozer (Figs. 21 and 22) and a front-end loader.

Metal structures were cut into manageable pieces with torches for ease of transport. The debris was sent to the radioactive waste disposal/storage site in plastic-lined, tarpaulin-covered dump trucks (Fig. 23). Contaminated soil was removed in a similar manner.

IV. WASTE MANAGEMENT

All wastes generated by this operation were buried in shallow pits (Fig. 24) at the Laboratory's radioactive waste disposal/storage site (TA-54) located 14 km from the decommissioning site. Wastes consisting of 2 662 m^3 of building debris and 285 m^3 of contaminated soil were disposed of in this manner.

All wastes were transported to the disposal site in tarpaulin-covered dump or flat-bed trucks. Trucks, loaders, and bulldozers used to load or transport contaminated materials were monitored during the job and decontaminated as necessary. Washing with water was sufficient to remove the contamination.

V. ENVIRONMENTAL SURVEILLANCE

The Laboratory's Environmental Surveillance Group monitored the operation with its routine air sampling network[3] (Table I). Four of the nearby sampling stations were selectively examined for ^{227}Ac and its decay daughters (Table II). Filter papers from the 25 sample locations were collected weekly and analyzed after a 7-10 day decay period. No measurable elevation in gross alpha activity was detected during the period of decommissioning.

When decommissioning personnel thought the job was completed, the environmental group sampled the area for concurrence. A value of ≤ 30 pCi gross alpha/gm of soil (the detection limit of the Laboratory's ZnS gross alpha measurement system[2]) was determined to be as low as practicable (ALAP). The Laboratory's Health Division Office and the Los Alamos Area Office of the US Department of Energy concurred (Appendix).

The area was contoured and revegetated with native grasses (Fig. 25).

VI. COST

The project required 102 working days (over a 6-month period) and a total cost of $276 300. Subcontractor manpower and equipment (Table III) costs were $188 500. Laboratory costs for health physics and management were $87 800.

TABLE II

AIR SAMPLING RESULTS FOR TA-21-153 OPERATIONS

Week Ending	Acorn Street[a] fCi/m^3	LAMPF[b] fCi/m^3	DP East STP[c] fCi/m^3	LA Airport[d] fCi/m^3
4/17/78	1.3 ± 0.4	1.4 ± 0.4	0.5 ± 0.2	1.1 ± 0.3
	147 ± 19	150 ± 20	66 ± 8	148 ± 19
4/24/78	1.9 ± 0.5	1.8 ± 0.5	0.6 ± 0.2	1.9 ± 0.5
	190 ± 20	190 ± 20	86 ± 11	180 ± 20
5/01/78	0.8 ± 0.3	1.8 ± 0.5	1.2 ± 0.4	1.6 ± 0.4
	170 ± 20	190 ± 20	107 ± 14	160 ± 20
5/08/78	2.5 ± 0.6	0.2 ± 0.4	0.2 ± 0.6	0.4 ± 0.4
	52 ± 7	122 ± 32	440 ± 120	136 ± 34
5/15/78	2.0 ± 0.5	1.3 ± 0.4	0.8 ± 0.3	0.9 ± 0.3
	330 ± 40	180 ± 20	106 ± 14	147 ± 19
5/22/78	0.7 ± 0.3	1.6 ± 0.4	0.8 ± 0.3	1.2 ± 0.4
	147 ± 19	220 ± 30	170 ± 20	230 ± 30
6/05/78	0.9 ± 0.5	0.5 ± 0.3	0.9 ± 0.4	0.8 ± 0.4
	95 ± 30	35 ± 10	72 ± 18	180 ± 40
6/12/78	3.5 ± 0.8	1.8 ± 0.5	1.6 ± 0.4	2.3 ± 0.5
	260 ± 30	139 ± 18	113 ± 14	160 ± 20
6/28/78	22 ± 0.5	20 ± 0.5	1.8 ± 0.4	1.4 ± 0.4
	35 ± 5	160 ± 20	104 ± 13	87 ± 11
7/07/78	1.7 ± 0.4	1.5 ± 0.9	3.6 ± 0.8	1.2 ± 0.3
	47 ± 6	62 ± 8	150 ± 20	63 ± 8
7/17/78	1.9 ± 0.5	2.4 ± 0.7	2.4 ± 0.6	2.8 ± 0.7
	151 ± 19	180 ± 20	142 ± 18	180 ± 20
7/24/78	0.6 ± 0.2	0.42 ± 0.19	0.6 ± 0.2	0.44 ± 0.17
	40 ± 5	30 ± 4	25 ± 3	29 ± 4
8/14/78	1.0 ± 0	1.4 ± 0.4	1.0 ± 0	1.4 ± 0.4
	45 ± 6	46 ± 6	36 ± 54	43 ± 6
8/21/78	1.1 ± 0.3	1.5 ± 0.4	1.1 ± 0.3	1.3 ± 0.3
	48 ± 6	47 ± 6	31 ± 5	40 ± 5
8/31/78*	20 ± 0.6	1.2 ± 0.4	1.6 ± 0.5	1.5 ± 0.5
	52 ± 7	46 ± 6	40 ± 5	52 ± 7
9/05/78	5.8 ± 1.3	1.2 ± 0.3	4.4 ± 1.1	5.1 ± 1.2
	120 ± 15	250 ± 30	98 ± 13	83 ± 11
9/18/78	2.4 ± 0.6	3.1 ± 0.7	2.0 ± 0.5	3.1 ± 0.7
	43 ± 6	43 ± 5	33 ± 4	39 ± 5
10/31/78	2.0 ± 0.6	1.2 ± 0.4	1.6 ± 0.5	1.5 ± 0.5
	52 ± 7	46 ± 6	40 ± 5	52 ± 7

*Gamma scan showed no evidence of actinium or its immediate daughters.

[a]Acorn Street is approximately 2250 m east of Decommissioning Site.

[b]LAMPF is approximately 1250 m southwest of Decommissioning Site.

[c]DP East Sewage Treatment Plant (STP) is approximately 350 m northwest of Decommissioning Site.

[d]LA Airport is approximately 550 m south-southwest of Decommissioning Site.

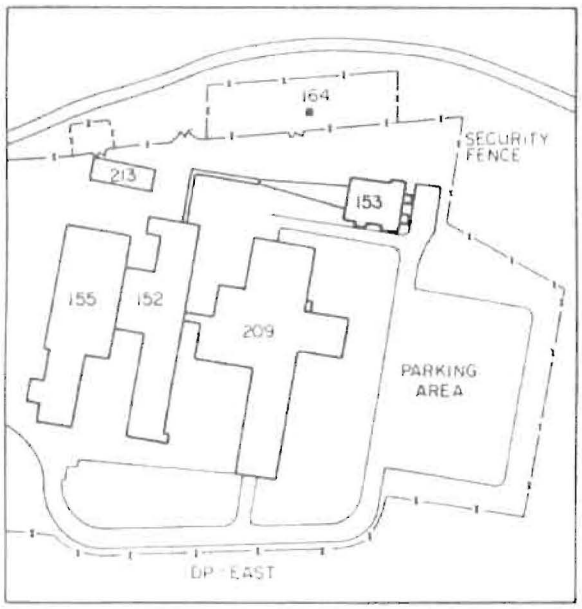

Fig. 1.
TA-21, DP East.

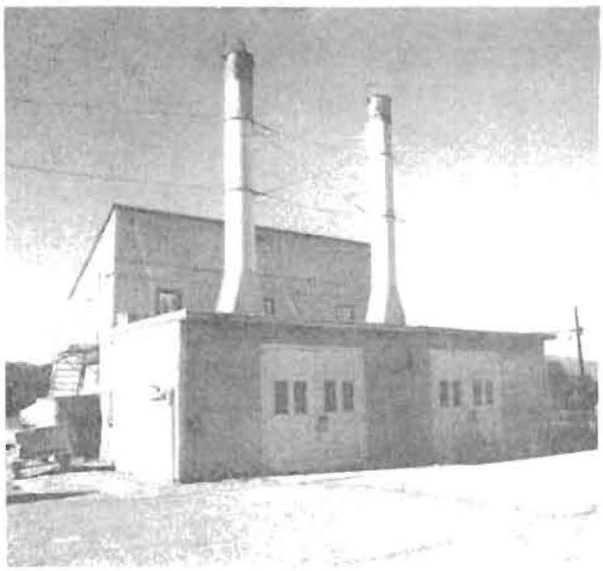

Fig. 2.
East elevation, Structure TA-21-153.

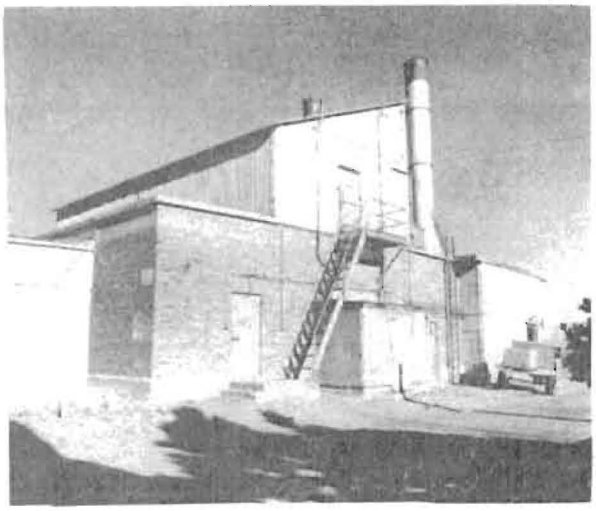

Fig. 3.
South elevation TA-21-153.

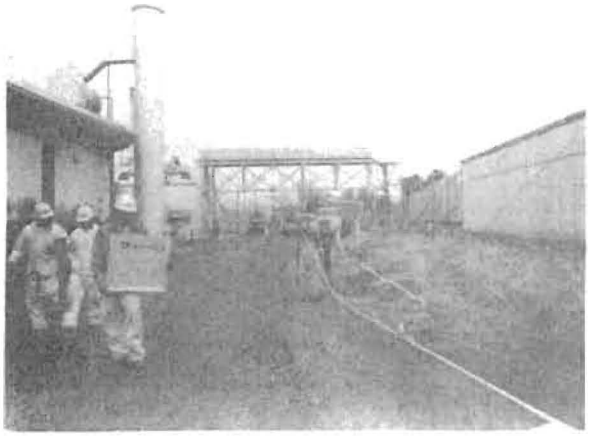

Fig. 4.
Metal duct.

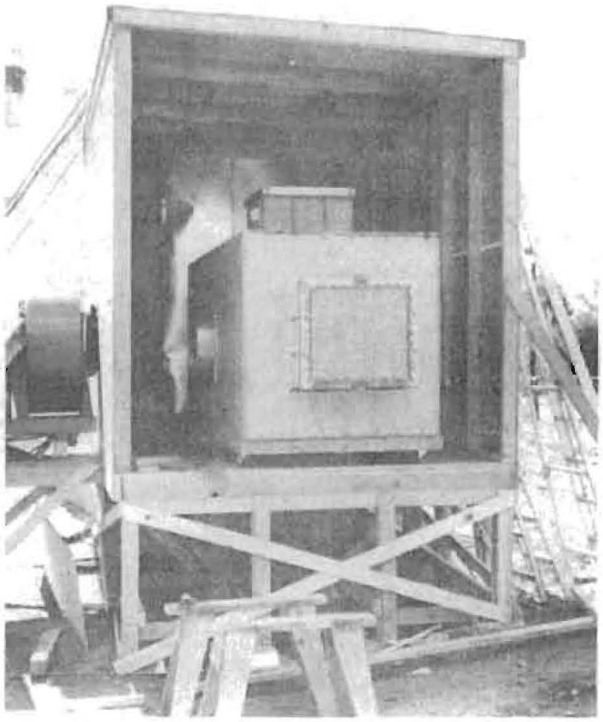

Fig. 7.
Temporary filtered exhaust system for transitional plenum.

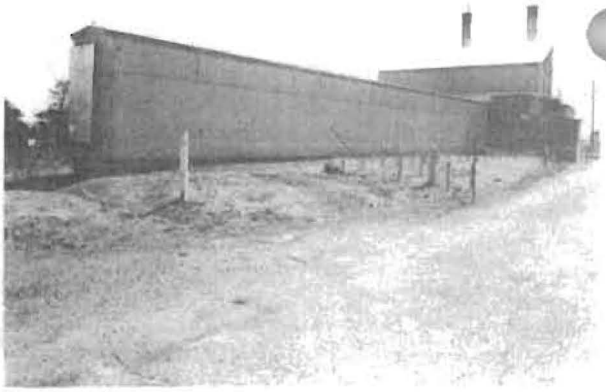

Fig. 8.
Transitional plenum after duct removal.

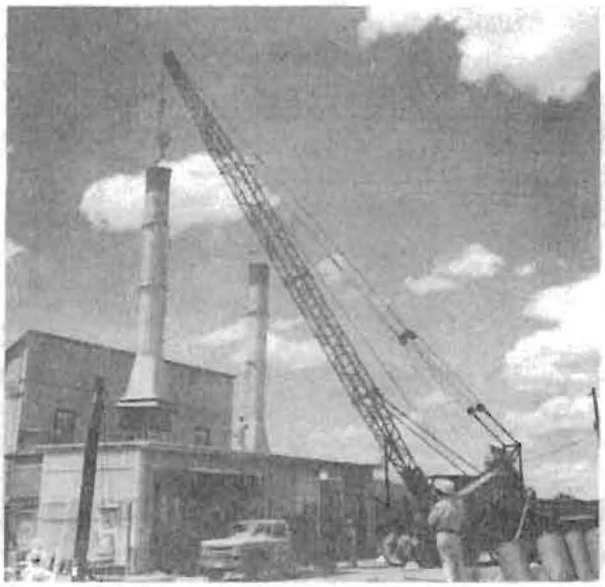

Fig. 9.
Removal of stack.

Fig. 10.
Packaging of stack.

Fig. 15.
Separation of blower room from building.

Fig. 16.
Collapsing the blower room.

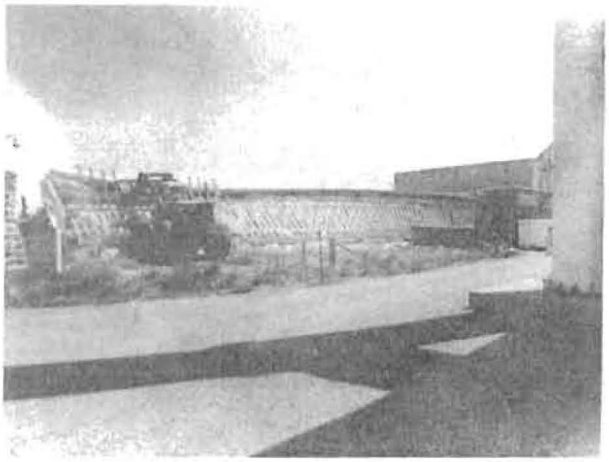

Fig. 17.
Collapsing the transitional plenum.

Fig. 18.
Water used for dust control.

Fig. 23.
Loading of debris.

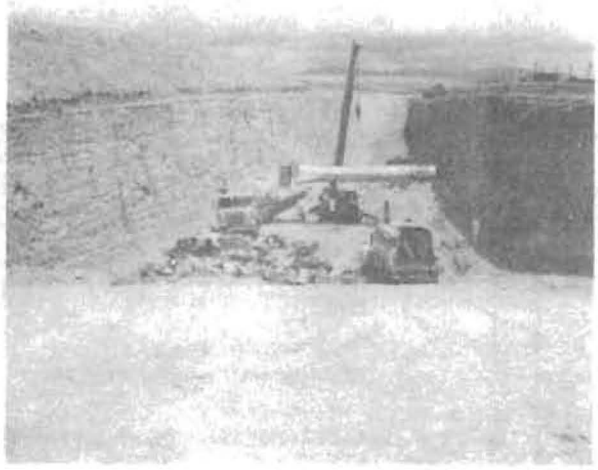

Fig. 24.
Typical burial pit at radioactive waste disposal/storage site.

Fig. 25.
Rehabilitated site.

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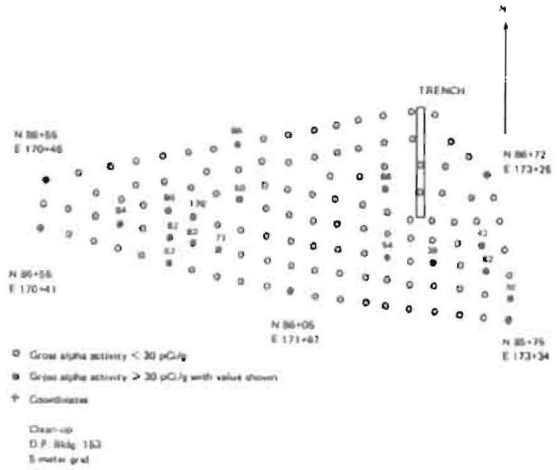

Fig. A-1.
Surface soil sampling results.

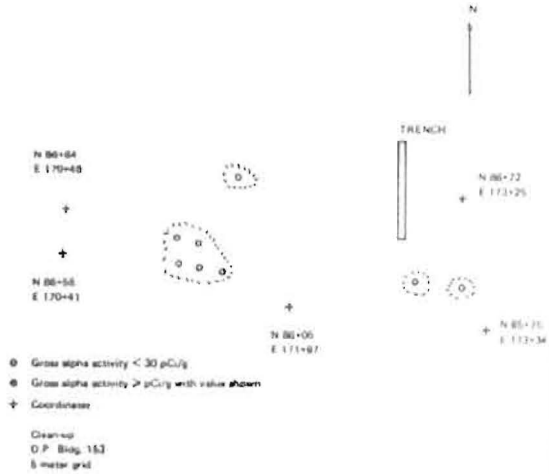

Fig. A-2.
Spot clean-up sampling results.

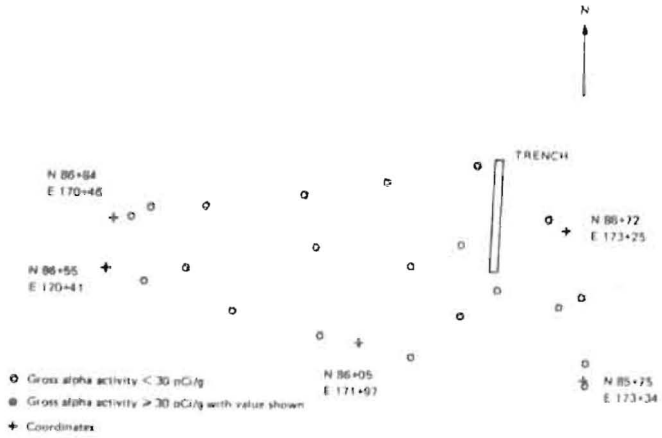

Fig. A-3.
Postcontouring sampling results.

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